Geophysical Research Abstracts, Vol. 7, 10177, 2005
SRef-ID: 1607-7962/gra/EGU05-A-10177

New tests of the fixed hotspot approximation

R. G. Gordon , D. L. Andrews and B. C. Horner-Johnson
Rice University, Houston, Texas, U.S.A.

We present new methods for estimating uncertainties in plate reconstructions relative to the hotspots and new tests of the fixed hotspot approximation. We find no significant motion between Pacific hotspots and Indo-Atlantic hotspots for the past ≈50 Myr, but large and significant apparent motion before 50 Ma.

If all the misfit between Pacific and Indo-Atlantic hotspots is due to motion between East and West Antarctica, then that motion is 800 ± 500 km since 68 Ma near the Ross Sea Embayment and progressively less along the Trans-Antarctic Mountains toward the Weddell Sea. The lower confidence limit of this estimate is ≈100 km more than the amount of motion estimated since ≈50 Ma by Cande et al. (2000).

Whether the apparent motion between hotspots is actually due to motion between hotspots or alternatively due to flaws in the global plate motion circuit can be tested with paleomagnetic data. The results of these paleomagnetic tests strongly support the fixed hotspot approximation.